

Before addressing the outstanding art rejections, a brief summary of Claim 1 is believed to be helpful. Claim 1 of the present invention is directed to an automated chemical synthesizer including plural reaction vessels, a plurality of liquid containers configured to contain liquid chemicals respectively, at least one liquid dispenser configured to dispense the liquid chemicals from the plurality of liquid containers to said plural reaction vessels according to a synthesizing protocol, a liquid amount storage configured to memorize a present amount of each of the liquid chemicals in the plurality of liquid containers, a dispensing amount calculator configured to calculate a dispensing amount of each of the liquid chemicals to be dispensed according to the synthesizing protocol, and a liquid shortage detector configured to detect shortages of the liquid chemicals in the plurality of liquid containers by comparing the present amount memorized in the liquid amount storage and the dispensing amount calculated by the dispensing amount calculator. By providing such a liquid shortage detector, shortages of reagents and solvents are detected by comparing the present amount memorized in the liquid amount storage with the dispensing amount, i.e., detection of the shortages are performed based on software without an additional hardware such as a sensor device.¹

The outstanding Office Action asserts that Petschek et al. disclose an automated chemical synthesizer as recited in Claim 1. Nevertheless, it is respectfully submitted that Petschek et al. are not believed to teach “a liquid shortage detector configured to detect shortages of the liquid chemicals in the plurality of liquid containers by comparing the present amount memorized in the liquid amount storage and the dispensing amount calculated by the dispensing amount calculator” as recited in Claim 1. On the other hand, Petschek et al. disclose the reagent add assembly 20a with the pressure sensors 125 or level

¹ See Specification, page 21, lines 9-12.

sensors 122 in order to determine the amounts of reagents in the bottles 50.² Furthermore, the Petschek et al. apparatus detects shortages of reagents only before the separation procedure, whereas the automated chemical synthesizer recited in Claim 1 allows to check on reagent and solvent shortages every time the synthesizing process is carried out, thereby allowing detection of a liquid shortage before a revised synthesizing process restarts even when a dispensing protocol is either changed or canceled and the synthesizing process is temporarily stopped.³ Therefore, the structure recited in Claim 1 is believed to be distinguishable from Petschek et al.

Stylli et al. disclose a system for identifying useful chemicals in liquid samples, but are not believed to teach “a liquid shortage detector configured to detect shortages of the liquid chemicals in the plurality of liquid containers by comparing the present amount memorized in the liquid amount storage and the dispensing amount calculated by the dispensing amount calculator” as recited in Claim 1. As such, the structure recited in Claim 1 is also believed to be distinguishable from Stylli et al.

Because neither Petschek et al. nor Stylli et al. disclose the liquid shortage detector as recited in Claim 1, even the combined teachings of these cited references are not believed to render the structure recited in Claim 1 obvious.

Likewise, Claims 19, 20 and 21 include subject matter substantially similar to what is recited in Claim 1 to the extent discussed above. Thus, Claims 19, 20 and 21 are also believed to be distinguishable from Petschek et al. and Stylli et al.

For the foregoing reasons, Claims 1, 19, 20 and 21 are believed to be allowable. Furthermore, since Claims 2-18 ultimately depend from Claim 1, substantially the same

² See Petschek et al., column 7, line 56, to column 8, line 3 and Figure 2E.

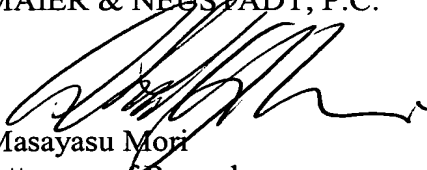
³ See Specification, Figs. 6-9B.

arguments set forth above also apply to these dependent claims. Hence, Claims 2-18 are believed to be allowable as well.

In view of the discussions presented above, Applicant respectfully submits that the present application is believed to be in condition for allowance, and thus an early action favorable to that effect is earnestly solicited.

Respectfully submitted,

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